



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/648,159	08/25/2003	Regis Gallet	179.041	3549
26067	7590	11/20/2006		
HEXCEL CORPORATION 11711 DUBLIN BOULEVARD DUBLIN, CA 94568				
			EXAMINER CROUSE, BRETT ALAN	
			ART UNIT	PAPER NUMBER

1774

DATE MAILED: 11/20/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/648,159

Applicant(s)

GALLET ET AL.

Examiner

Brett A. Crouse

Art Unit

1774

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 24 July 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-3 and 7-24 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-3 and 7-24 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- ☐ Notice of Informal Patent Application
- ☐ Other: _____

DETAILED ACTION

Miscellaneous

The amendment received 24 July 2006 has been entered.

Prior Rejections

The rejections of claims 1,7,8,10,11,14,15,16,18,20,21,22,23, and 24 under 35 U.S.C. 102 as anticipated by Toshiharu (US 3,666,615) are withdrawn after further consideration.

The rejections of claims 2,9,12,13,17, and 19 under 35 U.S.C. 103 as being unpatentable over Toshiharu (US 3,666,615) in view of Kuhn (US 3,935,355) are withdrawn after further consideration.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1,2,3,14,16,17,19,20,21,22,23 are rejected under 35 U.S.C. 102(b) as being anticipated by (Hayashi et al., US 5,698,725) hereinafter known as Hayashi.

Hayashi teaches in column 5, lines 11-27, woven glass fiber substrates which can be formed by perforation plain weaving. Hayashi further teaches in column 5, lines

Art Unit: 1774

49-67, prepregs in which the glass fiber substrates are impregnated with a thermosetting resin such as epoxy, phenolic, and bismaleimide. The resin can have additional components including hardeners and hardening promoters compounded with the resin. The mixed resin/hardener meets the claims of the present invention due to the open claim language. The claims are being interpreted as a resin layer comprising a resin and a hardening agent layer comprising a hardening agent. Each of the layers are able to contain additional components such as a hardening agent in the resin layer and a resin in the hardening agent layer. The methods of applying resin to the glass fiber substrate include spraying, or impregnating. Hayashi further teaches in column 6, lines 30-34, that sixteen layers of the prepreg were stacked and laminated together. This meets the limitations as recited in claims 1,2,3,14,16,17,19,20,21,22,23 of the present invention.

Claims 1-3, 7-12, 14-17, 19, 20, and 23 are rejected under 35 U.S.C. 102(b) as being anticipated by (Urech et al., US 4,908,273) hereinafter known as Urech.

Urech teaches in column 1, line 24 through column 2, line 43 compositions of epoxy resin and hardener which make up layers A and B. The mixed resin/hardener meets the claims of the present invention due to the open claim language. The claims are being interpreted as a resin layer comprising a resin and a hardening agent layer comprising a hardening agent. Each of the layers are able to contain additional components such as a hardening agent in the resin layer and a resin in the hardening agent layer. Urech further teaches in the abstract a carrier material between the layers

Art Unit: 1774

A and B. Urech further teaches in column 5, lines 1-18 a plurality of layers A and B. The passage further teaches carrier materials, which can be woven or non-woven materials including glass. The passage further teaches a perforated carrier. Urech further teaches in column 5, line 28-35 that the film can be applied as a solution or a melt, i.e. a paste. The passage further teaches the use of a separating film or paper. Urech further teaches in column 5, line 67 through column 6, line 4 the curing of the adhesive bond. This meets the limitations as recited in claims 1-3, 7-12, 14-17, 19, 20, and 23 of the present invention.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 1,2,3,13,14,15,16,17,19,20,21,22,23 are rejected under 35 U.S.C. 103(a) as being unpatentable over (Hayashi et al., US 5,698,725) hereinafter known as Hayashi as applied to claims 1,2,3,14,16,17,19,20,21,22,23 above, and further in view of (Zweben et al., US 4,888,247) hereinafter known as Zweben.

The teachings of Hayashi as in the above rejections are relied upon.

Hayashi does not teach the use of non-woven or unidirectional fabrics as a substrate. Zweben teaches in column 13, lines 22-28, that the reinforcing material can be woven or non-woven. Zweben further teaches in column 20, line 46-48 that the reinforcing material can be graphite fiber and that the fiber can be unidirectional. Zweben further teaches in column 10, lines 52-59 the use of aramid fibers as a reinforcing material. Zweben further teaches in column 14, lines 24-28 that the layers of the laminates can be perforated. Zweben further teaches in column 13 lines 38-54, that epoxy and phenolic resins can be used in forming the laminates. Additionally, the passage teaches a multilayer laminate which is cured by the application of heat and pressure. Zweben further teaches in column 16, line 49 through column 17, line 1 with reference to figure 3 that a plurality of resin impregnated fiber layers can be stacked such that neither face of the fiber layer contacts another fiber layer.

Hayashi teaches in column 2, lines 12-18 the object of his invention is to provide molded objects having superior solder heat resistance. Zweben teaches in column 1, lines 37-41 that differences in the coefficient of thermal expansion between components can result in failure of the components during soldering. Zweben uses a list of organic

Art Unit: 1774

and inorganic materials, such as, aramid, graphite, and silica, to provide a laminate which is resistant to thermal stresses. It would have been obvious to one of ordinary skill in the art at the time of invention by applicant to substitute aramid or graphite for the glass fiber of Hayashi to produce a substrate having superior resistance to thermal stress.

Claims 1,2,3,9,12,14,16,17,19,20,21,22,23,24 are rejected under 35 U.S.C. 103(a) as being unpatentable over (Hayashi et al., US 5,698,725) hereinafter known as Hayashi as applied to claim 1,2,3,14,16,17,19,20,21,22,23 above; and further in view of (Bales et al., US 5,268,055) hereinafter known as Bales.

The teachings of Hayashi as in the above rejections are relied upon. Hayashi does not teach the use of a protective film covering the resin or hardening layer. Hayashi further does not teach the use of vibration during the heating step. Bales teaches in column 3, lines 28-29 the use of a film a separator ply during the lay-up of the plies. Bales further teaches in column 3, lines 36-38 the use of vibration in combination with heat for optimal compaction of the laminate. It would have been obvious to one of ordinary skill in the art at the time of invention by applicant to incorporate the film and vibration of Bales with the prepreg of Hayashi to produce a stronger more uniform laminate.

Claims 1,2,3,7,8,9,10,11,12,14,15,16,17,18,19,20,21,22,23 are rejected under 35 U.S.C. 103(a) as being unpatentable over (Hayashi et al., US 5,698,725) hereinafter

Art Unit: 1774

known as Hayashi as applied to claims 1,2,3,14,16,17,19,20,21,22,23 above, and further in view of (Hori et al., US 4,243,462) hereinafter known as Hori.

The teachings of Hayashi as in the rejections above are relied upon. Hayashi does not teach the form of the applied resin or hardener as a paste. Hori teaches in column 8, lines 52-55, with reference to figure 6 an unsaturated compound material on a supporting layer and an initiator on a separate supporting layer. Hori further teaches in column 8, lines 20-38 that the unsaturated compound layer and initiator layers can be deposited from solution or by hot melt extrusion. Hori further teaches in column 9 lines 13-15, that the supporting layer is a strippable sheet, which covers the unsaturated compound layer and initiator layer of the composite. Hori further teaches in column 11, lines 53-54, that a redox catalyst of an aliphatic amine can additionally be added to the unsaturated compound layer. It would have been obvious to one of ordinary skill in the art at the time of invention by applicant to combine the prepreg of Hayashi with the hot melt deposition and strippable sheets of Hori to produce a structure having an extended shelf life.

Claims 1-3 and 7-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over (Hayashi et al., US 5,698,725) hereinafter known as Hayashi as applied to claim 1,2,3,14,16,17,19,20,21,22,23 above, and further in view of (Toshiharu et al., US 3,666,615) hereinafter known as Toshiharu.

The teachings of Hayashi as in the rejections above are relied upon. Hayashi does not teach the use of deposition of the resin layer or hardening agent layer as a

Art Unit: 1774

paste or film. Hayashi further does not teach the use of a protective film or paper over the resin layer or hardening agent layer. Hayashi further does not teach specific hardening agents. Toshiharu teaches in column 3 lines 42-47 the use of kraft paper as a separator. Toshiharu further teaches in column 2 lines 28-43 a film layer deposited on the resin or hardener layer. Toshiharu further teaches in column 2 lines 51-55 and column 2 line 70 through column 3 line 9 various hardening agents including imidazoles, anhydrides, and amines. The passage further teaches that the choice of hardening agents is not critical as long as the hardening agent can harden the thermosetting resin. It would have been obvious to one of ordinary skill in the art at the time of invention by applicant to combine the prepreg of Hayashi with the film or paper layers of Toshiharu to protect the sheets during storage.

Claims 1-3, 7-17, 19, 20, and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over (Urech et al., US 4,908,273) hereinafter known as Urech as applied to claim 1-3, 7-12, 14-17, 19, 20, and 23 above, and further in view of (Zweben et al., US 4,888,247) hereinafter known as Zweben.

The teachings of Urech as in the above rejections are relied upon. Urech does not teach the use of unidirectional fibers explicitly. Urech teaches only non-woven materials broadly. Zweben teaches in column 13, lines 22-28, that the reinforcing material can be woven or non-woven. Zweben further teaches in column 20, line 46-48 that the reinforcing material can be graphite fiber and that the fiber can be unidirectional. Zweben further teaches in column 10, lines 52-59 the use of aramid

Art Unit: 1774

fibers as a reinforcing material. Zweben further teaches in column 14, lines 24-28 that the layers of the laminates can be perforated. Zweben further teaches in column 13 lines 38-54, that epoxy and phenolic resins can be used in forming the laminates. Additionally, the passage teaches a multilayer laminate which is cured by the application of heat and pressure. Zweben further teaches in column 16, line 49 through column 17, line 1 with reference to figure 3 that a plurality of resin impregnated fiber layers can be stacked such that neither face of the fiber layer contacts another fiber layer. It would have been obvious to one of ordinary skill in the art at the time of invention by applicant to produce the curable adhesive of Urech as a perforated unidirectional sheet given the teachings of Zweben.

Claims 1-3, 7-12, 14-17, 19, 20, 23 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over (Urech et al., US 4,908,273) hereinafter known as Urech as applied to claim 1-3, 7-12, 14-17, 19, 20, and 23 above, and further in view of (Bales et al., US 5,268,055) hereinafter known as Bales.

The teachings of Urech as in the above rejections are relied upon. Urech does not teach the use of vibration during the heating step. Bales further teaches in column 3, lines 36-38 the use of vibration in combination with heat for optimal compaction of the laminate. It would have been obvious to one of ordinary skill in the art at the time of invention by applicant to combine the prepreg of Urech with the vibration of Bales to produce a highly compacted laminate.

Art Unit: 1774

Claims 1-3, 7-12, 14-20, and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over (Urech et al., US 4,908,273) hereinafter known as Urech as applied to claim 1-3, 7-12, 14-17, 19, 20, and 23 above, and further in view of (Toshiharu et al., US 3,666,615) hereinafter known as Toshiharu.

The teachings of Urech as in the above rejections are relied upon. Urech teaches the use of a hardening agent. Urech does not teach the use of a hardening agent selected from applicants list. Toshiharu teaches in column 2 lines 51-55 and column 2 line 70 through column 3 line 9 various hardening agents including imidazoles, anhydrides, and amines. The passage further teaches that the choice of hardening agents is not critical as long as the hardening agent can harden the thermosetting resin. Toshiharu further teaches in column 2, lines 37-39 the separation of the resin and hardening layers. It would have been obvious to one of ordinary skill in the art at the time of invention by applicant to combine the prepreg of Urech with the hardeners of Toshiharu to produce films capable of longer term storage.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The following references relate either to the field of invention or the subject matter of the invention, but, are not relied upon in the rejections of record: US 3,472,675; US 4,798,752; US 4,836,879; US 5,490,602.

Art Unit: 1774

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Brett A. Crouse whose telephone number is 571-272-6494. The examiner can normally be reached on Monday - Friday 6:00AM - 2:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Rena Dye can be reached on 571-272-3186. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

BAC 8 November 2006


RENA DYE
SUPERVISORY PATENT EXAMINER

Art Unit 1774
11/12/06